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09/935,918	08/23/2001	George Mauro	NATAPE P11AUS	1013
20210	7590	03/22/2004	EXAMINER	
DAVIS & BUJOLD, P.L.L.C. FOURTH FLOOR 500 N. COMMERCIAL STREET MANCHESTER, NH 03101-1151			STARKS, WILBERT L	
			ART UNIT	PAPER NUMBER
			2121	

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/935,918

Applicant(s)

MAURO, GEORGE

Examiner

Wilbert L. Starks, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Shidara et al (U.S. Patent Number 5,963,444; dated 05 OCT 1999; class 364; subclass 136). Specifically:

### **Claim 21**

Claim 21's "in association with each process device;" is anticipated by Shidara et al, Fig. 3, element 7.

Claim 21's "a device controller for controlling operation of the associated process device, each device controller including a process step memory for a storing a corresponding device process, wherein each device process includes one or more device steps wherein each device step corresponds to a process step and controls one or more corresponding operations of the associated process device; and" is anticipated by Shidara et al, Fig. 3, elements 9 and 10.

Claim 21's "an input device associated with the process device and under the control of a user for directing the device controller and associated process device through each device steps of the device process for that process device, with each device step being stored directly in the process step memory of the device controller; and" is anticipated by Shidara et al, Fig. 3, element 7.

Claim 21's "a master controller operating during the execution of a device process solely for generating step execute identifiers to the device controllers, wherein the device controllers are responsive to the step execute identifiers for cooperatively performing corresponding device steps of the device processes." is anticipated by Shidara et al, Fig. 3, element 1a.

### Claim 22

Claim 22's "The distributed process control system of claim 21, wherein a device controller is responsive to a **device response output** of the associated process device that indicates a state of operation of the associated process device representing that the associated process device has completed a process step for generating and providing to the master controller a step complete output indicating the completion of a device step by the device controller and the associated process device." is anticipated by Shidara et al, col. 21, lin. 52-65, where it recites:

Input data for an object of the PLC computing unit consists of main machine output data latched in the main machine output latch 506 through the remote PLC communication line 110, data receiving section 501, and received data

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storing section 502 from the main body 1a of the NC device, and obtained through the main machine output data bus 521; local machine output data, which is feedback data for the machine output processed by the PLC computing unit 516, obtained through the local machine output data bus 522; machine data 15 inputted from an external device through the external machine input I/F section 531 of the distributed remote PLC device 3; and temporary data latched in the data temporary storage register 517 and obtained through the internally-temporarily maintained data bus.

### Claim 23

Claim 23's "The distributed process control system of claim 22, wherein the master controller is responsive to step complete outputs of the device controllers for generating a next step execute identifier output to the device controllers." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a **stop command** from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 24

Claim 24's "a **step controller** responsive to a step execute identifier from the master controller for reading a corresponding device step from the process step memory and generating control outputs corresponding to the device step to the

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associated process device to direct the associated process device to perform the device step." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a **stop command** from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 25

Claim 25's "at least one step command directing an operation to be performed by the associated process device; and" is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

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Claim 25's "at least one control value indicating an operating state of the associated process device in performing the directed operation" is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 26

Claim 26's "a device interface for translating the at least one step command and at least one control value of each device step of the associated device process into control outputs for controlling operation of the associated process device." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of **controlling with a control apparatus** having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequenc program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC

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device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 27

Claim 27's "The distributed process control system of claim 24, wherein a step controller is responsive to a device response output of an associated process device that indicates a state of operation of the associated process device representing that the associated process device has completed a process step for generating a corresponding step complete output indicting the completion of a device step by the device controller and the associated process device." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of **controlling with a control apparatus** having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 28

Claim 28's "at least one input device for generating control inputs representing operations of a process device in a device step; and" is anticipated by Shidara et al, Fig. 3, element 110.



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Claim 28's "a command processor responsive to the input device control inputs at times outside the execution of a device process for generating a device step of a device process for a process device; and" is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of **controlling with a control apparatus** having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

Claim 28's "providing the device step to the device controller of the process device for storage in the device controller process step memory." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of **controlling with a control apparatus** having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### **Claim 29**

Claim 29's "a user input device associated with a process device associated by the at least one device controller for generating control input signals under direction of a user wherein the control input signals represent operations in a device step to be executed by the process device associated with the at least one device controller, wherein the step controller of the at least one device controller associated with the process device is responsive to the control input signals from the user input device associated with the process device for generating at least one device step of a device process to be executed by the process device and for indicating completion of the generation of the at least one device step to the master controller associated with the device controller and process device; and" is anticipated by Shidara et al, col. 12, lin. 17-24, where it recites:

Furthermore, the distributed type of remote PLC device 3 can be located at any site away from the main body 1a of the NC device, and improvement of functions can easily be realized by connecting a plurality of distributed remote PLC devices 3 to a remote PLC communication line 110 with serial communication, which makes it possible to rewrite a sequence program to other one as well as to monitor an operation state in each of the devices other than data transfer.

Claim 29's "wherein the master controller is responsive to an indication of the completion of the generation of a device step from the step controller of the device controller associated with the process device for generating a process step write identifier to at least the device controller associated with the process device; and" is anticipated by Shidara et al, Fig. 3, element 1a.

Claim 29's "wherein the device controller associated with the process device that is to execute a process step of the device process is responsive to each process step write identifier from the master controller for storing in the device controller process step memory of the associated process device a corresponding device step representing a state of operation of the associated process device" is anticipated by Shidara et al, Fig. 2, element 8.

### Claim 30

30. (NEW) The distributed process control system of claim 21, wherein a step execute identifier further includes one or more process controller identifiers identifying the process devices that are to execute a process step identified by a step execute identifier." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of **controlling with a control apparatus** having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a **sequence program** previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device **repeats execution** of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 31

Claim 31's "storing a device process in each device controller wherein the device process includes one or more device steps wherein each device step corresponds to a process step and controls one or more corresponding operations of the associated process device, by generating each device step of the device process by operation of a user controlled input device associated with the device controller wherein the input device is used by a user to direct the device controller and associated process device through each device step of the device process for the process device, and" is anticipated by Shidara et al, Abstract, where it recites:

In a control apparatus including a main control section and a plurality of remote PLC devices each connected to the main control section, the main control section has a PLC computing unit controlling the entire system and a remote PLC communication control section executing data transaction via a communication line with the plurality of remote PLC devices, and each remote PLC device including a communication control section executing data transaction via a communication line with the main control section, a **memory** section for storing therein a sequence program transmitted through the communication line and specified to the remote PLC device, a machine input/output I/F section for executing data transaction with external machine controlled by the remote PLC device, and a PLC computing section for executing PLC processing according to a sequence program and based at least on data transmitted from the main control section and data obtained from the machine input/output I/F section.

Claim 31's "storing each device step directly in a process step memory of the device controller each device process; and in a master controller and during an execution of a device process, generating only step execute identifiers to each device controller, wherein each of the device controllers is responsive to the step execute identifiers for cooperatively performing corresponding device steps of the device processes" is anticipated by Shidara et al, Abstract, where it recites:

In a control apparatus including a main control section and a plurality of remote PLC devices each connected to the main control section, the main control section has a PLC computing unit controlling the entire system and a remote PLC communication control section executing data transaction via a communication line with the plurality of remote PLC devices, and each remote PLC device including a communication control section executing data transaction via a communication line with the main control section, a **memory** section for storing therein a sequence program transmitted through the communication line and specified to the remote PLC device, a machine input/output I/F section for executing data transaction with external machine controlled by the remote PLC device, and a PLC computing section for executing PLC processing according to a sequence program and based at least on data transmitted from the main control section and data obtained from the machine input/output I/F section.

### Claim 32

Claim 32's "generating in a device controller and providing to the master controller an indication of a completion of a device step by the associated process device." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a sequence program specified to the remote PLC device until it receives a **stop command** from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 33

Claim 33's "storing a device process in each device controller, wherein" is anticipated by Shidara et al, Abstract, where it recites:

In a control apparatus including a main control section and a plurality of remote PLC devices each connected to the main control section, the main control section has a PLC computing unit controlling the entire system and a remote PLC communication control section executing data transaction via a communication line with the plurality of remote PLC devices, and each remote PLC device including a communication control section executing data transaction via a communication line with the main control section, a **memory** section for storing therein a sequence program transmitted through the communication line and specified to the remote PLC device, a machine input/output I/F section for executing data transaction with external machine controlled by the remote PLC device, and a PLC computing section for executing PLC processing according to a sequence program and based at least on data transmitted from the main control section and data obtained from the machine input/output I/F section.

Claim 33's "each device process controls the operations of the associated process device and includes one or more device steps wherein each device step corresponds to a process step and controls one or more corresponding operations of the associated process device; and" is anticipated by Shidara et al, Abstract, where it recites:

In a control apparatus including a main control section and a plurality of remote PLC devices each connected to the main control section, the main control section has a PLC computing unit controlling the entire system and a remote PLC communication control section executing data transaction via a communication line with the plurality of remote PLC devices, and each remote PLC device including a communication control section executing data transaction via a communication line with the main control section, a **memory** section for storing therein a sequence program transmitted through the communication line and specified to the remote PLC device, a machine input/output I/F section for executing data transaction with external machine controlled by the remote PLC device, and a PLC computing section for executing PLC processing according to a sequence program and based at least on data transmitted from the main control section and data obtained from the machine input/output I/F section.

Claim 33's "in a master controller, during an execution of a device process, generating only step execute identifiers to each device controller, wherein each of the

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device controllers is responsive to the step execute identifiers for cooperatively performing corresponding device steps of the device processes" is anticipated by Shidara et al, Abstract, where it recites:

In a control apparatus including a **main control section** and a plurality of remote PLC devices each connected to the main control section, the main control section has a PLC computing unit controlling the entire system and a remote PLC communication control section executing data transaction via a communication line with the plurality of remote PLC devices, and each remote PLC device including a communication control section executing data transaction via a communication line with the main control section, a **memory** section for storing therein a sequence program transmitted through the communication line and specified to the remote PLC device, a machine input/output I/F section for executing data transaction with external machine controlled by the remote PLC device, and a PLC computing section for executing PLC processing according to a sequence program and based at least on data transmitted from the main control section and data obtained from the machine input/output I/F section.

Claim 33's "in a device controller generating and providing to the master controller an indication of a completion of a device step by the associated process device, and" is anticipated by Shidara et al, Abstract, where it recites:

In a control apparatus including a **main control section** and a plurality of remote PLC devices each connected to the main control section, the main control section has a PLC computing unit controlling the entire system and a remote PLC communication control section executing data transaction via a communication line with the plurality of remote PLC devices, and each remote PLC device including a communication control section executing data transaction via a communication line with the main control section, a **memory** section for storing therein a sequence program transmitted through the communication line and specified to the remote PLC device, a machine input/output I/F section for executing data transaction with external machine controlled by the remote PLC device, and a PLC computing section for executing PLC processing according to a sequence program and based at least on data transmitted from the main control section and data obtained from the machine input/output I/F section.

Claim 33's "in the master controller and responsive to the indication of the completion of a device step of a process step by each of the device controllers directing associated process devices in performing a process, generating a next step execute identifier to the device controllers directing the associated process devices in performing a process" is anticipated by Shidara et al, Abstract, where it recites:

In a control apparatus including a **main control section** and a plurality of remote PLC devices each connected to the main control section, the main control section has a PLC computing unit controlling the entire system and a remote PLC communication control section executing data transaction via a communication line with the plurality of remote PLC devices, and each remote PLC device including a communication control section executing data transaction via a communication line with the main control section, a **memory** section for storing therein a sequence program transmitted through the communication line and specified to the remote PLC device, a machine input/output I/F section for executing data transaction with external machine controlled by the remote PLC device, and a PLC computing section for executing PLC processing according to a sequence program and based at least on data transmitted from the main control section and data obtained from the machine input/output I/F section.

#### **Claim 34**

in each process device and responsive to a step execute identifier from the master controller, reading a corresponding device step of the device process, and generating control outputs corresponding to the device step to the process device to direct the associated process device to perform the device step." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device,



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initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a **stop command** from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 35

at least one step command directing an operation to be performed by the associated process device; and." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a sequence program specified to the remote PLC device until it receives a **stop command** from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

at least one control value indicating an operating state of the associated process device in performing the directed operation." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC

devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a sequence program specified to the remote PLC device until it receives a **stop command** from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 36

translating the at least one step command and at least one control value of each device step of the associated device process into control outputs for controlling operation of the associated process device." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 37

37. (NEW) The method for distributed programmable control of process devices of claim 34, wherein a device controller is responsive to a state of operation of the associated process device representing that the associated process device has

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completed a process step for generating a corresponding step complete output indicating the completion of a device step by the device controller and the associated process device." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 38

in the master controller and only during a period outside of an execution of a device process, providing control inputs representing operations of a process device in a device step." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives

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a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

generating from the control inputs a device step of a device process for the process device; and ." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

providing the device step to the device controller as a device step of a device process of the process device." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequenc program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data

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transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### Claim 39

by operation of a user input device associated with a process device, generating control input signals under direction of a user wherein the control input signals represent operations in at least one device step of a device process to be executed by the process device" is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

by operation of a step controller of a device controller associated with the process device that is to execute the at least one device step of the device process and in response to the control input signals from the user input device, generating the at least one device step of the device process to be executed by the process device, and indicating completion of the generation of the at least one device step to the master

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controller associated with the device controller and process device" is anticipated by

Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

by operation of the master controller and in response to an indication of completion of the generation of a device step provided to the master controller from the step controller of the device controller associated with the process device, generating only a process step write identifier from the master controller to at least the device controller associated with the process device; and" is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device

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with a cycle not dependent on operations of a CPU of the main control section.

by operation of the device controller associated with the process device that is to execute the at least one process step of the device process and in response to each process step write identifier from the master controller, storing the corresponding device step representing a state of operation of the associated process device in the process step memory of the associated device controller" is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the specified remote PLC device, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a **sequence program** specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

#### Claim 40

The method for distributed programmable control of process devices of claim 31, wherein a step execute identifier further include one or more process device identifiers identifying the process devices that are to execute a process step identified by a step execute identifier." is anticipated by Shidara et al, col. 4, lin. 58-67; col. 5, lin. 1-5, where it recites:

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In a method of controlling with a control apparatus having a remote PLC device, said control apparatus comprising a main control section and a plurality of remote PLC devices each connected via a communication line to this main control section, the main control section fetches the number of units of the plurality of remote PLC devices, ID numbers for the remote PLC devices, switch information or the like in an offline transfer mode, downloads a sequence program previously set in the specified remote PLC device, initializes the **specified remote PLC device**, gives an instruction for start of PLC processing to the specified remote PLC device; and the remote PLC device repeats execution of the PLC processing for data specified according to a sequence program specified to the remote PLC device until it receives a stop command from the main control section, and executes cyclic data transaction between the main control section and the remote PLC device with a cycle not dependent on operations of a CPU of the main control section.

### ***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



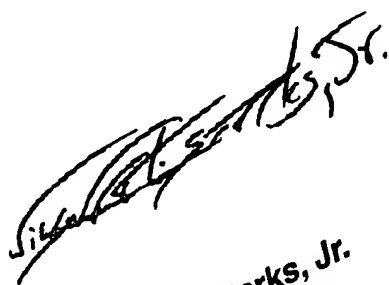
Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Wilbert L. Starks, Jr. whose telephone number is (703) 305-0027.

Alternatively, inquiries may be directed to the following:

<b>S. P. E. Anil Khatri</b>	<b>(703) 305-0282</b>
<b>After-final (FAX)</b>	<b>(703) 746-7238</b>
<b>Official (FAX)</b>	<b>(703) 746-7239</b>
<b>Non-Official/Draft (FAX)</b>	<b>(703) 746-7240</b>

WLS

19 July 2004



Wilbert L. Starks, Jr.  
Primary Examiner  
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